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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Pascal Del Gallo

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AIR LIQUIDE

Intellectual Property

2700 POST OAK BOULEVARD, SUITE 1800

HOUSTON, TX 77056

EXAMINER

NGUYEN, KHANH TUAN

ART UNIT

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1796

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02/23/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,867	Applicant(s) DEL GALLO ET AL.	
	Examiner KHANH T. NGUYEN	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 01/20/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-33, 35, 37, 41-44, 46 and 50 is/are pending in the application.
- 4a) Of the above claim(s) 37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-33, 35, 41-44, 46, 50 is/are rejected.
- 7) ☒ Claim(s) 35 and 41-44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>n/a</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Final

Response to Amendment

1. The amendment filed on 01/20/2010 is entered and acknowledged by the Examiner. Claims 30-33, 35, 41-44, 46, and newly added claim 50 are currently pending in the instant application. Claims 1-29, 34, 36, 38-40, 45, and 47-49 have been cancelled. Claim 37 remain withdrawn from further consideration.
2. The amendment to the Specification filed on 01/20/2010 is entered and acknowledged by the Examiner.
3. The objection of claim 30 is withdrawn in view of applicant's amendment.
4. Claims 30, 32, 33, 35, and 41-44 remain provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 22-35 and 38-39 of co-pending Application No. 11/049,586 (as filed on 11/04/2010) as set forth below.
5. The rejection of claims 31-35 under 35 U.S.C. 112, second paragraph, is rendered moot in view of applicant's amendment and/or cancellation.

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6. The rejection of claims 30-35 under 35 U.S.C. 102(b)/103(a) over Mackay is rendered moot in view of applicant's amendment and/or cancellation.

7. The rejection of claims 30-35 and 40-42 under 35 U.S.C. 102(b)/103(a) over Shen is rendered moot in view of applicant's amendment and/or cancellation.

8. The rejection of claims 43-46 under 35 U.S.C. 103(a) over Shen and either Carolan or Prasad is rendered moot in view of applicant's amendment and/or cancellation.

Response to Arguments

9. Applicant's arguments filed on 01/20/2010 have been fully considered but they are not persuasive. In response to the applicant's remark on page 9, applicant argues that since claim 37 and the subject matter of not cancelled claim 36 do not narrow the types of compound (C₁) recited by claim 30, sub-species 1b also reads upon claim 37 and the subject matter of now-cancelled claim 36. The examiner respectfully disagrees with the applicant argument. As stated in the Restriction Requirement mailed on 07/31/2009, claim 37 is drawn to a nonoxide-type material (2b) whereas claim 36, now incorporated into claim 30, is drawn to an oxide-type material (2a). Clearly the species lack unity and does not form a single general inventive concept under PTC rule 13.1, thus claim 37 remain non-elected and is

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withdrawn from further consideration. The examiner notes that applicant has elected sub-specie of oxide-type material (2a) as recited in now cancelled claim 36 since the subject matter has been incorporated into independent claim 30.

Information Disclosure Statement

10. No additional information disclosure statement (IDS) filed.

NEW grounds of Objection(s) and/or Rejection(s)

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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12. Claims 30, 32, 33, 35, 41-44, and 50 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-24 and 35 of copending Application No. 11/049,586 (as filed on 02/05/2009). Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending applicant is drawn to superposed layers of materials wherein each a) dense layer, b) porous layer, and c) catalytic layer comprises of compound (C₁), compound (C₂) and compound (C₃) within overlapping ranges. Thus, it would have been obvious for a skilled artisan to arrive at claimed composite composition comprising of compound (C₁), compound (C₂) and compound (C₃) as recited in copending Application No. 11/049,586.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

13. Claims 35 and 41-44 are objected to because of the following informalities:

Claim 35 depends from cancelled claim 34. Appropriate correction is required. For the purpose of examination, the instant claim will be assumed to depend from claim 30.

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Claims 41-44 depend from cancelled claim 40. Appropriate correction is required. For the purpose of examination, the instant claim will be assumed to depend from claim 30.

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claims 30-33, 35, 41-44, 46, and 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 30, the Markush language of a perovskite compound in component a) and compound (C₂) in component b) is indefinite since this is improper Markush language. The phrase "selected from a group consisting" should be added after "perovskite compound" of component a) and the phrase "selected from a group consisting of" should replace the phrase "chosen from" of component b). See MPEP 2173.05(h)(I).

Claims 31-33, 35, 41-44, 46, and 50 depend from claim 30, thus contain the same deficiencies as recited above.

Claim Rejections - 35 USC § 103

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16. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

17. Claims 30-33, 35, 41-44, 46, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. 5,624,542 (Shen) in view of WO 2002/058830 (hereinafter refer to as Chaput).

18. Note the English equivalent of WO 2002/058830 is U.S. Pub. 2004/0069655 A1 and will be used below.

Shen discloses a ceramic/metallic composite membrane having enhanced mechanical properties by incorporating oxidation-resistant metal phase to the ceramic phase (see Abstract). The membrane is useful as an ionic- electronic conductor for oxygen exchange reactions (Col. 7, lines 24-27) or coating for reduction of oxygen (Col. 7, lines 43-63). Shen teaches the composite may broadly comprises of about 50 vol% to about 99 vol% ceramic phase including doped perovskite ceramic material (compound (C₁)) such as La_{1-z}Sr_zCo_wO_{3-δ} and La_{1-z}Sr_zCo_{1-w}Fe_wO_{3-δ} and about 1 vol% to about 50 vol% of a metal phase (compound (C₂)) including metal oxide and metal alloy (Col. 4, lines 53-60 and Col. 5, lines 25-45). It should be noted that Shen need not suggest compound C₃ since the amount of said compound Ca may include 0 vol%, i.e. does not exceed 0.5 vol% as recited in Claim 32 and a volume amount tend toward 0 as recited in Claim

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33. Furthermore, the instant claims are product-by-process claims and are not limited to the manipulations of the recited steps, only the structure limited by the steps. Therefore, the patentability of the product does not depend on its method of production and the claimed steps were not given patentable weight.

Shen failed to suggest a perovskite compound selected from the formula recited in claim 30.

However, Chaput discloses an oxide ion conductive ceramic membrane that comprises of doped perovskite ceramic material as suggested by Shen, i.e. $\text{La}_u\text{Sr}_v\text{CoO}_w$ and $\text{La}_u\text{Sr}_v\text{Co}_d\text{Fe}_c\text{O}_w$, and a perovskite compound having a formula of $\text{La}_u\text{Sr}_v\text{FeO}_w$ as recited in claim 30 ([0056] to [0058]). Chaput also discloses ceramic oxides including ZrO_2 and MgO [0051].

Therefore, one skilled in the art would have had a reasonable expectation of success for substituting the doped perovskite ceramic material of Shen (i.e. $\text{La}_u\text{Sr}_v\text{CoO}_w$ and $\text{La}_u\text{Sr}_v\text{Co}_d\text{Fe}_c\text{O}_w$) with a perovskite compound having a formula of $\text{La}_u\text{Sr}_v\text{FeO}_w$ as suggested by Chaput for the same utility and the result would have been predictable.

19. Claims 30-33, 35, 41-44, 46, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 00/59613 (Mackay) in

view of WO 2002/058830 (Chaput). The English equivalent of WO 2002/058830 is U.S. Pub. 2004/0069655 A1 will be use.

Mackay teaches a mixed conducting metal oxide material useful for manufacturing of catalytic membranes for gas-phase oxygen separation process. The metal oxide material comprises of greater than about 90 wt. % of a single-phase mixed metal oxide having a brown-millerite structure (see Abstract; Page 1 line 14 to Page 2 lines 11) and greater than about 4 wt. % other phases such as metal oxides for preparing off-stoichiometric mixture or due to inaccurate amount of starting material (Page 6, line 28 to Page 7 line 6). It should be noted that Mackay need not suggest compound Ca since the amount of said compound Ca may include zero volume percent, i.e. does not exceed 0.5 vol% as recited in Claim 32 and a volume amount tend toward 0 as recited in Claim 33. Furthermore, the instant claims are product-by-process claims and are not limited to the manipulations of the recited steps, only the structure limited by the steps. Therefore, the patentability of the product does not depend on its method of production and the claimed steps were not given patentable weight.

Mackay failed to suggest compound (C₁) being a perovskite compound having a formula as recited in claim 30.

However, Chaput discloses an oxide ion conductive ceramic membrane that comprises brown-millerite material or perovskite material wherein the perovskite material having a formula of $\text{La}_u\text{Sr}_v\text{FeO}_w$ as recited in claim 30 ([0055] to [0058]). Chaput also discloses ceramic oxides including ZrO_2 and MgO [0051].

Therefore, one skilled in the art would have had a reasonable expectation of success for substituting the brown-millerite material of Mackay with the perovskite compound having a formula of $\text{La}_u\text{Sr}_v\text{FeO}_w$ as suggested by Chaput for the same utility and the result would have been predictable.

Conclusion

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH T. NGUYEN whose telephone number is (571)272-8082. The examiner can normally be reached on Monday-Thursday 7:00-5:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Kopec/
Primary Examiner, Art Unit
1796

/KTN/
Examiner
02/17/2010